
REMARKS

Claims 1-19 are currently pending in the subject application and are presently under consideration. The specification and claims 9 and 13 have been amended herein. Replacement paragraphs are at pages 2-3. A listing of all claims is at pages 4-7. Pursuant to the approval of the drawing correction previously submitted, replacement drawing sheets are being concurrently filed herewith. Favorable consideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Objection to the Specification

In Section 4-3 of the Office Action dated October 23, 2002, it was noted that lines 11-12 at page 21 referenced the eleventh and twelfth formulas in a table with ten formulas. In the reply to the above-noted Office Action, applicants' representative provided a replacement paragraph, which remedied the typographical error. As noted by the Examiner, the reply additionally and mistakenly submitted that the table had twelve statements. Applicants' representative acknowledges that the table has ten statements, as provided in the previously submitted replacement paragraph, and apologizes for any inconvenience the mistake may have caused the Examiner. In the view of the previously submitted replacement paragraph, it is respectfully requested that this objection be withdrawn.

II. Objection to the Specification

The amendments to the specification in response to the Office Action dated October 23, 2002 have been objected to under 35 U.S.C. §132 for introducing new matter into the disclosure. Withdrawal of this objection is respectfully requested for at least the following reasons. The amendments to the specification do not introduce new matter since the amendments clarify and complete the prior disclosure.

New matter is matter involving a **departure** from or an **addition** to the **original disclosure** (specification, drawings or claims). See *Twin Disc, Inc. v. The United States*, 10 Cl.Ct. 713, 745 (Cl.Ct. 1986), 231 U.S.P.Q. 417. See also *Triax Co. v. Hartman Metal Fabricators, Inc.*, 479 F.2d 951, 956-57 (2d Cir. 1973), 178 U.S.P.Q. 142. An amendment to an application is **not** "new matter" within the Patent Act or Rules of the Patent Office ... [i]f the

latter-submitted material accused of being "new matter" simply *clarifies* or *completes* the prior disclosure *Eli Lilly and Co., v. Premo Pharmaceutical Laboratories*, 630 F.2d 120 (1980), 207 U.S.P.Q. 719 *citing Triax*, 479 F.2d 951, 956-57, 178 U.S.P.Q. 142.

In the Office Action dated May 5, 2003, the Examiner states the "applicants are required to cancel the new matter in the reply to this Office Action or to show the support in the original specification to possibly overcome this objection." (Office Action, page 3, ¶3). However, it is not clearly indicated in the subject Office Action what is asserted to be new matter. Rather, it is noted that added material "has been *sampled* ... as detailed in section 6 below." (Office Action, page 3, ¶3) (Emphasis added). Thus, applicants' representative does not know what amendments are considered to be new matter. Furthermore, the *MPEP §608.04* provides that "the subject matter which is considered to be new matter *must be clearly identified by the examiner.*" (Emphasis added).

Assuming *arguendo* that the Examiner is referring to paragraphs 3-6, 8, 10-35 and 39-40 as provided in the "Clean Version of Replacement Paragraphs" section in the reply to the Office Action dated May 5, 2003 (since the remaining replacement paragraphs relate to spelling, enumeration and figure number corrections), the amendments in the subject paragraphs do *not* add matter involving a *departure* from or an *addition* to the original specification. Instead, the amendments *clarify* and *complete* the specification by *curing errors* that were a result of lack of font support in the device employed to print the subject application; such errors would have been obvious to one of ordinary skill in the art of ambient calculus-based on modal logics at the time of the invention. *See MPEP §2163.07* ("an amendment to correct an *obvious error* does *not* constitute new matter where one skilled in the art would not only recognize the existence of error in the specification, but also the appropriate correction. *In re Oda*, 443 F.2d 1200, 170 USPQ 268 (CCPA 1971)") (Emphasis added); *See In re Oda* at 1204 ("that *amendments* may be made to patent applications for the purpose of *curing defects*, obvious to one skilled in the art, in the drawings or *written descriptions* of inventions, is so *well settled* that we deem it unnecessary to cite authorities in support thereof.") (Emphasis added).

In the subject application, one skilled in the art at the time of the invention would have readily recognized that many of the symbols related to ambient calculus did not print or did not

print correctly. For example, to those of ordinary skill in the relevant art at the time of the invention, it would have been known that the satisfaction relation is expressed *via* the “ \models ” symbol. For example, in the publication titled “*Anytime, Anywhere: Modal Logics for Mobile Ambients (Extended Abstract)*” dated Jun 8, 1999, at page 3, Section 3.2 (“Satisfaction”), it is stated, “the satisfaction relation $P \models A$ means that the process P satisfies the closed formula A .” The publication then provides a satisfaction relation table listing various satisfaction relationships that include the “ \models ” symbol. Thus, in the subject application at page 22, lines 11-13, it would have been obvious to one of ordinary skill in the relevant art at the time of the invention, in view of the foregoing publication, that the satisfaction symbol “ \models ” had been erroneously omitted and replaced by a space in the satisfaction relationships in the satisfaction table. Therefore, in light of MPEP §2163.07, amending the specification to cure the obvious errors that would have been recognized by one skilled in the art at the time of the invention does **not** constitute new matter.

Likewise, the ambient calculus-based on modal logics symbol “ \triangleq ” can be utilized in the definition of a “free name,” *inter alia*. For example, the following can be utilized to indicate that there is no free name for the inactivity process: $fn(0) \triangleq \phi$. It would have been known to those of ordinary skill in the art of ambient calculus-based on modal logics at the time of the invention that the symbol “ \triangleq ” is utilized in the definition of a “free name.” For example, in the publication titled “*Mobile Ambients*” dated February 11, 1999, at page 6, a “free names” table provides various free names, including $fn(0) \triangleq \phi$. Thus, in the subject application at page 15, line 14, it would have been obvious to one of ordinary skill in the art at the time of the invention, in view of the foregoing publication, that the symbol “ \triangleq ” had been erroneously replaced by the “@” symbol in the free names table. Again, in light of MPEP §2163.07, curing such obvious errors does not constitute new matter.

Similar to the above examples, the other amendments to the specification provided in the reply to the previous Office Action (dated October 23, 2002) relate to printed symbol errors that would have been obvious to one skilled in the art of ambient calculus-based on modal logics at the time of the invention.

An IDS listing *non*-prior art publications is being concurrently filed herewith *only* to facilitate understanding what was known in the relevant art at the time of the invention and to expedite allowance of the claimed invention.

In view of the above, it is respectfully requested that this objection be withdrawn.

III. Rejection of Claims 1-19 Under 35 U.S.C. §112

Claims 1-19 stand rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In the Office Action dated May 5, 2003, it is stated that undefined functions and procedures and incomplete or incorrect expressions in the subject application render subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Withdrawal of this rejection is requested for at least the following reasons.

The specification has been amended herein to further cure typographical errors that would have been obvious to one skilled in the relevant art at the time of the invention. *See* MPEP §2163.07. In addition, because ambient calculus-based on modal logics would have been known to one of ordinary skill in the art at the time of the invention, detailed definitions are not required since “a patent *need not teach*, and *preferably omits*, what is well known in the art.” *See In re Buchner*, 929 F.2d 660, 661, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991).

Accordingly, this rejection should be withdrawn.

IV. Rejection of Claims 1-19 Under 35 U.S.C. §112

Claims 1-19 stand rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time of the application was filed, had possession of the claimed invention. Withdrawal of this rejection is requested for at least the following reasons. Regarding curing errors obvious to one skilled in the relevant art at the time of the invention, this rejection should be withdrawn for at least the reasons discussed *supra* in connection with the objection pursuant 35 U.S.C. §132. Regarding the term “iff,” the

specification has been amended herein, and it is believed that the amendments render this rejection moot.

V. Rejection of Claims 9-13 Under 35 U.S.C. §112

Claims 9-13 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which applicant regards as the invention. The rejection of independent claims 9 and 13 (and claims 10-12, which depend therefrom) should be withdrawn in view of the amendments to independent claims 9 and 13, which renders this rejection moot.

VI. Rejection of Claims 1-19 Under 35 U.S.C. §101

Claims 1-19 stand rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter. Withdrawal of this rejection is respectfully requested for at least the following reasons.

The inquiry into patentability pursuant §101 requires an examination of the contested claims to see if the claimed subject matter, as a whole ... has been ***reduced to some practical application rendering it "useful."*** *AT&T* at 1357 citing *In re Alappat*, 33 F.3d 1526, 31 1544, 31 U.S.P.Q.2D (BNA) 1545, 1557 (Fed. Cir. 1994) (Emphasis added) (holding that more than an abstract idea was claimed because the claimed invention as a whole was directed toward forming a specific machine that produced the useful, concrete, and tangible result of a smooth waveform display).

Independent claims 1, 8, 9, 13 and 14 recite similar limitations regarding ***analyzing whether a process [ambient] satisfies a formula via*** employing a predetermined modal logic based on ambient calculus and ***outputting the result.*** By way of example, it is disclosed in the subject application that an ambient (*e.g.*, a process) 202 may desire to move out of ambient 204 and that a formula may exist that defines whether such a move can occur. (*See* page 13, lines 14-17). Both the process and formula can be “checked” *via* a novel aspect of the present invention. (*See* page 4, lines 10-16 and Fig. 3). In addition, the ambient 202 and the formula can be expressed in modal logic based on ambient calculus such that the formula can be applied against

the ambient 202 to produce a **useful, concrete, and tangible result** that indicates whether the move is permissible. (See page 13, lines 15-18). The result can be utilized to allow the move if the formula was satisfied. Additional practical examples that produce useful, concrete, and tangible results can be found with the descriptions in connection with Figures 3-5.

Furthermore, the court in *AT&T* noted that the Supreme Court in *Diamond v. Diehr*, 450 U.S. 175, 101 S. Ct. 1048 (1981) stated “‘when [a claimed invention] is performing a function which the patent laws were designed to protect (e.g., transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of §101.’” *Diehr*, 450 U.S. at 192.” (*AT&T* at 1358-59). The *AT&T* court then provided the following discussion of *Arrhythmia Research Tech. Inc. v. Corazonix Corp.*, 958 F.2d 1053, 22 U.S.P.Q.2D (BNA) 1033 (Fed. Cir. 1992), which the *AT&T* court noted is consistent with *Diehr*.

Arrhythmia's process claims included various mathematical formulae to analyze electrocardiograph signals to determine a specified heart activity. See *id.* [*Arrhythmia*] at 1059, 22 U.S.P.Q.2D (BNA) at 1037-38. The *Arrhythmia* court reasoned that the method claims qualified as statutory subject matter by noting that the steps transformed physical, electrical signals from one form into another form - a number representing a signal related to the patient's heart activity, a non-abstract output. See *id.* 22, U.S.P.Q.2D (BNA) at 1038. The finding that the claimed process “transformed” data from one “form” to another simply confirmed that *Arrhythmia*'s method claims satisfied §101 because the mathematical algorithm included within the process was **applied to produce a number which had specific meaning - a useful, concrete, tangible result** - not a mathematical abstraction. See *id.* at 1060, 22 U.S.P.Q.2D (BNA) at 1039.

Id. at 1359. (Emphasis added). Here, the application of applying the process against the formula (wherein both can be represented in modal logic based on ambient calculus) produces a result with a meaning that can indicate whether the move is permissible and that can be utilized to allow the move. Therefore, **the result is useful, concrete and tangible**, pursuant §101.

Thus, under *AT&T* (and consistent with *Diehr*) the invention as claimed in the subject application provides a useful, concrete, and tangible result pursuant §101; and therefore, claim 1-19 recite statutory subject matter. Accordingly, the rejection of independent claims 1, 8, 9, 13 and 14 (and claims 2-7, 10-12 and 15-19, which depend therefrom) should be withdrawn.

VII. Rejection of Claims 1-4, 6-7, 9-10, 12, 14-16 and 18-19 Under 35 U.S.C. §102(a)

Claims 1-4, 6-7, 9-10, 12, 14-16 and 18-19 stand rejected under 35 U.S.C. §102(a) as being anticipated by Stanski, *et al.*, “Expressing Dynamics of Mobile Agent Systems Using Ambient Calculus”, Proceedings of Ninth International Workshop on Database and Expert Systems Applications, August 1998, pages 434-439. It is respectfully submitted that this rejection should be withdrawn for at least the following reasons. Stanski, *et al.*, does not describe, teach or suggest each and every limitation of the subject claims.

A single prior art reference anticipates a patent claim only if it expressly or inherently **describes each and every limitation** set forth in the patent claim. *Trintec Industries, Inc., v. Top-U.S.A. Corp.*, 295 F.3d 1292, 63 U.S.P.Q.2D 1597 (Fed. Cir. 2002). “A claim is anticipated only if **each and every element** as set forth in the claim is found, either expressly or inherently **described** in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). “The **identical invention** must be shown in as complete detail as is contained in the ... claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

In particular, independent claims 1, 9 and 14 recite **analyzing** whether a process satisfies a formula utilizing a predetermined modal logic based on ambient calculus. As disclosed in the subject application, the **analysis** can be summarized *via* the following ambient calculus-based on modal logics **model checking** theorem: for all restriction-free process P and \triangleright -free closed formulas A, $P \models A$ if and only if $\text{Check}(P, A)$, where $\text{Check}()$ is the analysis of a process. (See application, page 33, lines 4-8).

Stanski, *et al.*, does not describe, teach or suggest employing an ambient calculus-based on modal logics **model checking technique to analyze** whether a process satisfies a formula. Rather, Stanski, *et al.* discloses that the referenced paper “present[s] some early work in the area of formal agent notation as introduced by Cardelli and Gordon with their ambient calculus [2].” (See Section 1, ¶3). In addition, Stanski, *et al.* discloses that the referenced paper “discuss[es] this important work [of Cardelli and Gordon] and comment[s] on the limitations within their formal notation while proposing some extensions.” (See Section 1, ¶3). The extensions

proposed by Stanski, *et al.* include “agent billing, migration rules and acceptance restrictions, security, descriptions of environment and agent capabilities.” (*See* Section 6). However, neither the summary of Cardelli and Gordon’s early work nor the proposed extensions provided in the reference teach or suggest the invention as claimed.

In view of the foregoing, it is respectfully requested the rejection to independent claims 1, 9 and 14 and dependent claims 2-4, 6-7, 10, 16 and 18-19 be withdrawn.

VIII. Rejection of Claims 5, 8, 11, 13, and 17 Under 35 U.S.C. § 103(a)

Claims 5, 8, 11, 13, and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Stanski, *et al.*, “Expressing Dynamics of Mobile Agent Systems Using Ambient Calculus”, Proceedings of Ninth International Workshop on Database and Expert Systems Applications, August 1998, pages 434-439, in view of Applicants’ disclosure of “a unification algorithm” (Application, page 34). It is respectfully submitted that this rejection should be withdrawn for at least the following reasons. The combination of Stanski, *et al.* and the disclosed “unification algorithm” does not teach or suggest all the claim limitations of the subject claims.

To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, *the prior art reference* (or references when combined) *must teach or suggest all the claim limitations*. *See* MPEP §706.02(j).

Independent claims 8 and 13 recite limitations similar to independent claims 1, 9 and 14 regarding *analyzing* whether a process satisfies a formula utilizing a predetermined *modal logic based on ambient calculus*. Therefore, for the reason noted *supra*, Stanski, *et al.* does not teach or suggest the invention as claimed in independent claims 8 and 13. In addition, the known “unification algorithm” disclosed in the subject application (that can be utilized in connection with the invention) does not make up for the aforementioned deficiencies of Stanski, *et al.* Accordingly, the rejection of claims 5, 8, 11, 13 and 17 should be withdrawn.

Conclusion

The present application is believed to be condition for allowance in view of the above amendments and comments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,

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